

**BY ORDER OF THE COMMANDER
301ST FIGHTER WING**

**301ST FIGHTER WING INSTRUCTION
21-110**



16 JULY 2012

Maintenance

***FOREIGN OBJECT DAMAGE AND
DROPPED OBJECT PREVENTION
PROGRAM***

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Instruction (AFI) 21-101, *Aircraft Equipment Maintenance Management*. This instruction establishes policies and procedures for an effective and comprehensive Foreign Object Damage (FOD) and Dropped Object Prevention Program (DOP). It applies to operational and maintenance activities assigned to the 301st Fighter Wing, Naval Air Station, Joint Reserve Base, Fort Worth, Texas. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the recommending office thru the 301FW Publications/Forms Managers (301 CF/SCBP) to Higher Headquarters is necessary. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in Air Force Records Information Management System (AFRIMS) at the Air Force (AF) Portal: <https://mv.af.mil/afirms/afirms/afirms/rims.cfm>

1. Program Responsibility:

1.1. The 301st Fighter Wing Vice Commander (301FW/CV) serves as the FOD/DOP program manager, in accordance with AFI 21-101.

1.2. The 301 FW/CV will appoint a qualified 301st Maintenance Group Quality Assurance (QA) (301MXG/MXQ) individual, E-6 (or above) with 8 years experience in the maintenance field to the position of FOD/DOP monitor. Their name will be posted in prominent places within the unit on a locally developed visual aid. The FOD/DOP program

monitor is responsible for directing and managing the program in accordance with applicable Air Force and Air Force Reserve Command policies and instructions.

2. Procedures:

2.1. The 301 FW/CV will ensure:

2.1.1. Unit commanders appoint FOD/DOP program committee members. Members will represent their commander's FOD issues at the committee meetings, bring back, and disseminate to the organization any FOD/DOP information.

2.1.2. Provide local guidance to ensure each FOD mishap is investigated and action taken to solve any underlying problems.

2.1.3. Review all unit FOD mishap reports and analyze the reports and other data for trends, identifying areas requiring management action.

2.1.4. Ensure FOD prevention is part of QA inspections.

2.2. The 301 FW/ FOD/DOP Monitor Will Ensure:

2.2.1. Briefs the FOD committee on items of interest to include airfield FOD concerns, Navy sweeper status, airfield projects that may produce FOD and DOP.

2.2.2. Periodically inspect and report damaged pavement, flightline construction, and other hazards in or near aircraft parking ramps or taxiways to the airfield manager and monitor status to ensure timely repairs.

2.2.3. Conducts a thorough investigation to ascertain the root cause for FOD mishaps and to determine if any underlying problems exist.

2.2.4. Performs FOD inspections monthly in various areas throughout the maintenance complex and flight line. These inspections will be documented in the Quality Assurance Tracking and Trend Analysis (QANTTAS) database.

2.3. FOD/DOP Program Committee: Will be comprised of representatives from all organizations having a direct responsibility for flight line usage and chaired by at least one of the following individuals or their delegate: 301 FW/CV, 301 OG/CC, 301 MXG/CC, or the 301 MSG/CC. As a minimum, 301 FW Safety, 301st Civil Engineering Squadron, 301st Security Forces Squadron, DoD Security Police, 301st Logistics Readiness Squadron, 301st Maintenance Squadron, and 301st Aircraft Maintenance Squadron will be members of this committee. Navy and 136th Airlift Wing may be invited to attend as well. As a minimum, meetings will be held quarterly.

3. Flightline Driving:

3.1. All organizations will ensure:

3.1.1. Assigned individuals qualified to operate vehicles on the flight line are familiar with Air Force Occupational and Environmental Safety, Fire Protection and Health (AFOSH) Standard (STD) 91-100, *Aircraft Flight Line – Ground Operations and Activities*.

3.1.2. A complete foreign object (FO) tire check is accomplished upon entry onto flight line areas at entry/FO entry points. Any vehicle leaving the paved surface while on the

flight line must re-accomplish the FO check upon re-entry. Vehicles will stop at the FO control point(s) to the flight line, inspect and remove FO from tires, perform a tire roll-over, inspect and remove FO from tires and place FO in vehicle FO container, then proceed.

3.1.3. All vehicles that drive behind Hangar 1643 accomplish a FO tire check prior to re-entry onto the flight line areas in front of Hangar 1643. Vehicles will stop at the FO control point(s) to the flight line, inspect and remove FO from tires, perform a tire roll-over, inspect and remove FO from tires and place FO in vehicle FO container, then proceed.

3.1.4. All vehicles normally driven on the flight line are equipped with secure and lidded FO containers. Containers will be stenciled with "FOD" in contrasting colored letters no smaller than 2 inches. Vehicle operators will empty the FO containers daily at the end of each work shift.

3.1.5. Fire extinguishers carried on or mounted to vehicles have safety chains or cables attached to the extinguishers safety pins to prevent FOD. Fire extinguishers mounted on the back/bed of vehicles or mounted on the sides of vehicles must be securely mounted to ensure fire extinguishers/hardware remains secure to prevent potential FOD incidents.

4. FOD Prevention Practices and Guidelines:

4.1. Aircraft or equipment involved in a FOD incident is evaluated by 301 MXG/MXQ for possible impoundment. Notify 301 FW Safety Office and accomplish Air Force Reserve Command (AFRC) Form 42, *Foreign Object Damage (FOD) Mishap Investigation Checksheet* for all FOD incidents. Quality Assurance will conduct a thorough FOD mishap investigation to determine the root cause and to determine if any underlying problems exist. The results of this investigation will be reported as appropriate.

4.2. When any item is lost on an aircraft, ensure a RED-X is placed in the Air Force Technical Order (AFTO) Form 781-A, *Maintenance Discrepancy and Work Document* or equivalent forms system and that Maintenance Operations Center (MOC) and QA are notified. If any item is lost on an aircraft and not found by the end of the shift, an AFRC Form 174, *Lost Tool/Object Report* will be initiated. A thorough search will be directed to include the use of borescope, as appropriate, and Non-Destructive Inspection (NDI) if necessary. If the item is not found, management will determine the appropriate course of action and document the results on the AFRC Form 174.

4.3. Extreme caution will be exercised using toolboxes, test equipment, etc. A Consolidated Tool Kit (CTK) and FO inspection will be accomplished upon completion of the assigned task.

4.4. All maintenance personnel will secure hardware removed from the aircraft in screw bags. Screw bags will be marked with the aircraft tail number and item nomenclature to indicate which panel, component, or structure the hardware was removed from or attached to the item itself.

4.5. When a person enters an engine intake, pocket-less coveralls with no buttons (pockets may be sewn shut) and shoe covers will be worn (boots may be removed). All items will be removed from shirt and trouser pockets prior to donning coveralls and shoe covers. Aircraft

engine intake inspections will be documented on a RED-X in the AFTO 781A, Maintenance Discrepancy and Work Document, and will be accomplished as follows:

- 4.5.1. At no time will items, (e.g., aircraft forms binders, digital video recorder (DVR) tapes, checklists, tools.), be placed in or on engine intakes. This does not apply to technicians performing maintenance, inlet inspections and blade blending requiring lights, files, or other tools inside aircraft inlets.
- 4.5.2. In all cases, prior to engine start, a CTK and SE inventory will be accomplished.
- 4.5.3. Prior to engine start and aircraft return, the crew chief will perform a FOD check.
- 4.5.4. Engine inlet covers will be kept in place on aircraft engine inlets except when maintenance or preparation for flight requires their removal.
- 4.6. When cannon plugs or other connectors are disconnected, both the cannon plug and receptacle will be covered with a plastic cap or plug, screw bag, or plastic bag. Aluminum foil or other metals covers not specifically designed for electrical connectors will not be used.
- 4.7. All personnel entering aircraft cockpits will ensure that personal belongings are properly secured to prevent FOD. All open pockets must be emptied, unless pockets can be sealed, zipped, or otherwise closed to prevent items from falling out.
- 4.8. Personal tools not controlled through CTK procedures are NOT authorized on the flight line, or in any maintenance area. (e.g., Mini-Mag type flashlights, Leatherman type multi-tools, buck knives). Mark and control tools or equipment that a work center assigns/issues to an individual IAW MAJCOM supplement. Personally purchased tools are not authorized.
- 4.9. Building custodians will monitor facility areas for items that could be potential FOD hazards and establish controls.

5. FOD Walks:

- 5.1. FOD walks will be accomplished prior to the start of the daily flying period by maintenance personnel within the maintenance group. All aircraft operating areas are to be inspected and made free of FOD up to the adjacent taxiways (this includes the high-side ramp when unit aircraft are parked in that area).
 - 5.1.1. The 301st Aircraft Maintenance Squadron (301 AMXS) and 301st Maintenance Squadron (301MXS) will ensure:
 - 5.1.2. Personnel report to the front of Hangar 1643 at a predetermined time. Personnel will form a line the full width of the 301st Fighter Wing aircraft-parking ramp. Personnel will make sweeps of the aircraft parking area as required.
 - 5.1.3. Personnel report to the inside of Hangar 1643 at a predetermined time. Personnel will form a line the full width of the hangar. Personnel will make a full sweep of the hangar as required.
 - 5.1.4. Munitions personnel will perform a daily FOD check of their primary delivery route. The FOD check of alternate routes will be performed prior to use.
 - 5.1.5. Personnel will perform a FOD inspection of both End of Runway (EOR) and taxiway areas prior to use.

6. Clothing Policy:

6.1. Restricted area badges issued with imbedded metal clips are authorized so long as the badge and clip are both secured with a subdued nylon/cotton cord. Restricted area badges with imbedded metal clips must not be used with the plastic armband. Plastic armband and neck holders are authorized. When worn around the neck, cords will have a breakaway feature.

6.2. Ear protectors or communication headsets are the only headgear authorized for wear while working on or within danger zones of aircraft with operating engines. Hats or other headgear will not be worn within 25 feet of an operating jet engine.

6.3. Wigs, hairpieces, metal and plastic hair fasteners, and any jewelry (except watches) are not authorized on the flightline or in shops where maintenance is performed. Watches will be removed while performing maintenance or entering an aircraft cockpit.

7. Dropped Objects:

7.1. Aircraft secondary inspections (e.g., doors, panels, covers, cowlings, fairings, fillets, etc.) or items that have the potential to depart the aircraft in-flight will be performed by personnel performing EOR procedures.

7.1.1. Personnel must ensure doors, cowlings, and panels fit properly. Insure the proper fasteners, nut plates, and latching devices were used to secure the items and that all fasteners (etc.) are fully and properly engaged.

7.1.2. Document the Air Force Technical Order (AFTO) Form 781-A, *Maintenance Discrepancy and Work Document*, as appropriate.

7.2. Dropped Object Investigation and Reporting:

7.2.1. Anyone suspecting a dropped object will immediately notify MOC.

7.2.2. No maintenance of any type will be accomplished in the dropped object area until QA completes a thorough investigation.

7.2.3. Quality Assurance Will:

7.2.3.1. Investigate all dropped objects for root cause. The investigation will attempt to determine and identify any material design deficiency/failure, personnel error, or repeat trends. Anytime material design deficiency/failure is identified as the cause, or suspected cause of a dropped object, it will be reported as a Deficiency Report (DR), even when an exhibit is not available.

7.2.3.2. If a trend is identified, Quality Assurance will initiate referral reports to ensure actions are taken to correct the problem. Copies of the report will be provided to the appropriate group and squadron commanders as required.

7.2.3.3. Dropped object incidents will be loaded in the QANTTAS database, and included in the QA monthly and quarterly summaries.

7.2.3.4. Report dropped objects per TO 00-35D-54, *USAF Deficiency Reporting and Investigating System*.

8. Training:

8.1. Unit/Shop training monitors will provide a monthly FOD training/briefings for all assigned personnel.

8.2. QA and/or unit/shop training monitors will provide FOD and Dropped Object Prevention training initially to all newcomers. The 301FW/CV can direct more frequent training if required.

9. Award Program:

9.1. The following outlines the FOD Awards Program. The intent of this program is to increase FOD, Dropped Object and Lost Tool awareness and reward outstanding contributions by 301 FW personnel for their efforts. The 301 FW/CV or 301 MXG/CC or their designated representative will present the awards.

9.2. Golden Washer Award: QA will conduct four random housekeeping inspections per month IAW the established and published QA Annual MSEP Plan. The unit that demonstrates the best housekeeping and FOD prevention practices will be selected as the quarterly winner. A certificate of recognition signed by the 301 FW/CV or 301 MXG/CC will be presented for this achievement.

9.3. Golden FOD Award: This award recognizes an individual(s) that go above and beyond supporting FOD prevention or an event that significantly prevents potential FOD that could damage equipment or aircraft saving the unit significant monies. A certificate of recognition signed by the 301 FW/CV or 301 MXG/CC will be presented for this achievement.

RONALD B. MILLER, Brig Gen, USAFR
Commander

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 21-101, *Aerospace Equipment Maintenance Management*

AFI 21-101, AFRC Sup 1, *Aerospace Equipment Maintenance Management*

AFOSH STD 91-100, *Aircraft Flight Line Ground-Operations and Activities*

TO 00-35D-54, *USAF Deficiency Reporting and Investigating System*

Adopted Forms

AFRC Form 42, *Foreign Object Damage (FOD) Mishap Investigation Checksheet*

AFRC Form 174, *Lost Tool/Object Report*

AFTO Form 781-A, *Maintenance Discrepancy and Work Document*

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFOSH STD—Air Force Occupational and Environmental Safety, Fire Protection and Health Standard

AFTO—Air Force Technical Order

AMXS—Aircraft Maintenance Squadron

CTK—Consolidated Tool Kit

DOP—Dropped Object Prevention

DR—Deficiency Report

DVR—Digital Video Recorder

EOR—End-of-Runway

FW—Fighter Wing

FO—Foreign Object

FOD—Foreign Object Damage

IAW—In-Accordance-With

MOC—Maintenance Operations Control

MXG—Maintenance Group

MXS—Maintenance Squadron

NDI—Non-Destructive Inspection

OPR—Office of Primary Responsibility

QA—Quality Assurance

QANTTAS—Quality Assurance Tracking and Trend Analysis

RDS—Records Disposition Schedule